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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/581,720

06/05/2006

Toshiaki Shimada

740819-1147

8572

78198

7590

07/24/2009

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EXAMINER

KRAUSE, JUSTIN MITCHELL

ART UNIT

PAPER NUMBER

3656

MAIL DATE

DELIVERY MODE

07/24/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/581,720	<b>Applicant(s)</b> SHIMADA, TOSHIKI	
	<b>Examiner</b> JUSTIN KRAUSE	<b>Art Unit</b> 3656	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 June 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>2/12/09, 7/12/07, 5/23/07, 6/5/06</u> .                       | 6) <input type="checkbox"/> Other: _____                          |

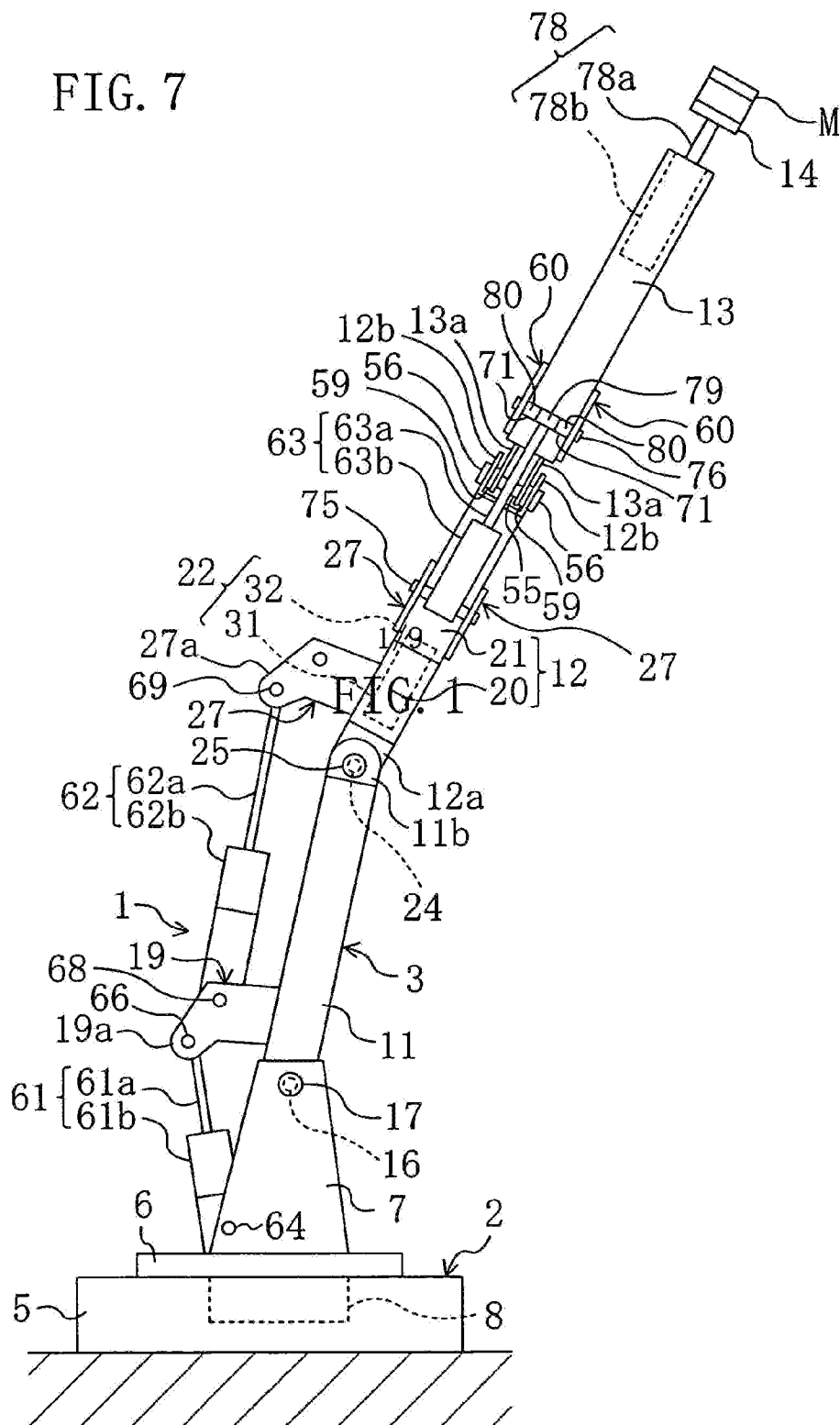


## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to because Figure 7 as currently filed includes "1/9" and "FIG.1" in the center of the drawing (the image below depicts figure 7 as presently filed). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

FIG. 7



### ***Specification***

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

The disclosure is objected to because of the following informalities: The headings should be amended to conform to US practice as detailed above. Also, the specification makes reference to a figure 13 (page 9, line 12). No figure 13 has been filed, the specification provides a description for figures 1-10 only.

Appropriate correction is required.

### ***Claim Objections***

Claims 1 and 4 is objected to because of the following informalities: In claim 1, the phrase "the arm components includes" (lines 6 and 8) is improper grammar. The phrase should be amended to read --the arm components include-- or --the arm components including--. The phrase in claim 4, "any one of claims 1" is improper grammar. The phrase should be amended to recite -- claim 1--. Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims use the term "its" in reference to elements claimed. For clarity and to avoid ambiguity, "its" should be replaced with the element being recited.

Regarding claim 1, the phrase, "closer to the base than the first arm component is", is indefinite. It is unclear what the scope and meaning of the phrase is, since there are multiple ways the phrase can be interpreted. Since the arm is articulated and may contain any plural number of arm components, possible orientations of the robot arm exist where the first arm component is physically closer to the base than the second

arm component, and therefore the device would not be able to satisfy the claim in all arrangements. It appears as if the intent is to recite that within the plurality of arm components, the second arm component is connected at a point between the base and the first arm component. The claim will be interpreted in this manner for purposes of examination, however clarification is necessary.

There is no antecedent basis in claim 1 for, "its tip side end".

In claim 1, there is no antecedent basis for "the arm axis". It is unclear what the arm axis is defined as. It is assumed "the arm axis" is along the length of the second arm component.

### ***Claim Rejections - 35 USC § 103***

Claims 1, 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers (US Patent 5,738,481) in view of Palmero (US Patent 6,531,798).

Rogers discloses an articulated industrial robot comprising:

A robot arm (fig. 2 for example) including a plurality of arm components (30/44, 51/92) connected to one another by connection shafts (46), a base (12) to which the robot arm is connected, wherein,

the robot arm includes arm actuation means (36, 64, 70) for swinging the arm components,

the arm components including a first arm component (51/92) at a tip side of the robot arm, the first arm component having a wrist (which rotates as illustrated by



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rotation direction 102 in figure 5a, or may be a ball joint, 114/116 as illustrated in figure 5b),

the arm components including a second arm component (30/44) which is closer to the base than the first arm component is, being divided at an axially intermediate portion (30 is separate from 44) into a base-side portion (30) and a tip-side portion (44).

Rogers does not disclose the second arm component having rotation means for rotating the tip side part around the arm axis relative to the base side part,

the rotation means including a drive shaft extending in the arm axis direction and having a thread groove in its outer surface, a moving device for axially moving the drive shaft, and a threaded member meshed with the thread groove of the drive shaft, and

the moving device is fixed to one of the base-side part and the tip-side part, while the threaded member is fixed to the other.

Palmero teaches an arm component (10/70) which has a base-side part (10) and a tip-side part (70) having rotation means (col. 3, lines 26-30) for rotating the tip-side part around the arm axis relative to the base side part,

the rotation means including a drive shaft (60) extending in the arm axis direction and having a thread groove (as shown in fig. 1) in its outer surface, a moving device (20 and 14) for axially moving the drive shaft (the drive shaft is axially movable relative to the tip-side part), and a threaded member (82) meshed with the thread groove of the drive shaft, and

the moving device is fixed to the base-side part, while the threaded member is fixed to the tip-side part for the purpose of providing a compact, lightweight rotary and linear movement actuator device which is simple and economical to manufacture (col. 1, lines 46-50).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Rogers to include rotation means rotation means for rotating the tip side part around the arm axis relative to the base side part, the rotation means including a drive shaft extending in the arm axis direction and having a thread groove in its outer surface, a moving device for axially moving the drive shaft, and a threaded member meshed with the thread groove of the drive shaft, and the moving device is fixed to one of the base-side part and the tip-side part, while the threaded member is fixed to the other for the desired purpose of providing a compact, lightweight rotary and linear movement actuator which is simple and economical to manufacture as taught by Palmero.

Regarding claim 2, the base side part and the tip side part are hollow, (see fig. 1 of Palmero), the moving device is contained in the base-side part, the threaded member is contained in the tip-side part. (Contained is interpreted as 'including or incorporating', therefore under a broad and reasonable interpretation, the threaded member is contained in the assembly which comprises the "tip-side part").

Regarding claim 4, Rogers discloses the first arm component including wrist actuation means for reciprocating the wrist in the arm axis direction (92 reciprocates with respect to 51).

Claim 3 rejected under 35 U.S.C. 103(a) as being unpatentable over Rogers in view of Palmero as applied to claims 1 and 2 above, and further in view of Shimada (JP 2003-343679).

Rogers does not disclose the moving device including a nut meshed with the thread groove of the drive shaft, a motor for rotating the nut around the drive shaft, and a speed reduction mechanism for reducing a rotation speed of the output shaft of the motor to transmit torque of the motor to the nut.

Shimada teaches a moving device including a nut meshed with the thread groove of the drive shaft, a motor for rotating the nut around the drive shaft and a speed reduction mechanism for rotating the nut around the drive shaft (translated abstract, as supplied by Applicant) for the purpose of providing a moving device capable of axially moving a drive shaft at a predetermined speed without being disturbed by a gear changing means.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Rodgers to include a moving device including a nut meshed with the thread groove of the drive shaft, a motor for rotating the nut around the drive shaft and a speed reduction mechanism for rotating the nut around the drive shaft for the desired purpose of providing a moving device capable of axially moving a

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drive shaft at a predetermined speed without being disturbed by a gear changing means as taught by Shimada.

### ***Double Patenting***

There is currently no double patenting between the instant application and Pending US Application 10/581,112.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUSTIN KRAUSE whose telephone number is (571)272-3012. The examiner can normally be reached on Monday - Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on 571-272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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/Justin Krause/  
Examiner, Art Unit 3656